WHAT IS CLAIMED IS:

1.   A wireless network device for communicating with a network comprising:

a memory to store an image comprising a plurality of virtual machines and only one multi-tasking operating system, wherein each of the virtual machines comprises a wireless

5   network application to execute on the multi-tasking operating system;

a processor to execute the virtual machines; and

a port comprising

        a physical-layer device to communicate with the network, and

        a media access controller to communicate with the physical-layer device and

10 the processor.

2.   A wireless network device according to claim 1 which is compliant with a standard selected from the group consisting of IEEE standards 802.11, 802.11a, 802.11b, 802.11g and 802.11n.

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3.   The wireless network device of claim 1, wherein the memory comprises a non-volatile memory, further comprising:

a volatile memory; and

a memory controller to create a copy of the image from the non-volatile memory to

20 the volatile memory;

wherein the processor executes the virtual machines from the volatile memory.

4.   The wireless network device of claim 1:

wherein the memory comprises a virtual machine queue for each virtual machine and

25 a processor queue for the processor;

wherein the processor stores data to be processed for the virtual machine being executed by the processor in the processor queue;

wherein each virtual machine creates a copy in the respective virtual machine queue of the data in the processor queue when the processor is executing the respective virtual

30 machine; and

wherein when the processor resumes executing one of the virtual machines after executing another of the virtual machines, the one of the virtual machines copies the data from the respective virtual machine queue to the processor queue.

5   5.   The wireless network device of claim 1, wherein the wireless network applications are selected from the group consisting of:

a wireless network access point;

a wireless network client;

a wireless network point-to-point bridge;

10   a wireless network multi-point bridge; and

a wireless network repeater.

6.   The wireless network device of claim 1, wherein the image further comprises:

a plurality of virtual machine device drivers to communicate with the virtual

15   machines; and

a media access controller device driver to communicate with the virtual machine device drivers and the media access controller.

7.   The wireless network device of claim 1, further comprising:

20   an input device to select one or more of the virtual machines;

wherein the processor executes the virtual machines selected by the input device.

8.   The wireless network device of claim 1, wherein the processor executes a plurality of the virtual machines concurrently.

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9.   The wireless network device of claim 1:

wherein the virtual machines comprise a wireless network access point virtual machine and a wireless network client virtual machine;

wherein the processor executes the wireless network access point virtual machine and

30   the wireless network client virtual machine concurrently;

wherein the wireless network client virtual machine comprises

a first virtual wireless port to communicate with the port, and

a first virtual bridge to communicate with the first virtual wireless port; and

wherein the wireless network access point virtual machine comprises

a second virtual wireless port to communicate with the port,

5   a virtual distribution service port to communicate with the first virtual bridge, and

a second virtual bridge to communicate with the second virtual wireless port and the virtual distribution service port.

10   10.   A method for a wireless network device for communicating with a network comprising:

storing an image comprising a plurality of virtual machines and only one multi-tasking operating system, wherein each of the virtual machines comprises a wireless network application to execute on the multi-tasking operating system; and

15   executing the virtual machines.

11.   The method of claim 10, wherein the wireless network device is compliant with a standard selected from the group consisting of IEEE standards 802.11, 802.11a, 802.11b, 802.11g and 802.11n.

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12.   The method of claim 10, wherein the image is stored in a non-volatile memory, further comprising:

copying the image from the non-volatile memory to a volatile memory; and

wherein the virtual machines are executed from the volatile memory.

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13.   The method of claim 10, further comprising:

creating in the volatile memory a virtual machine queue for each virtual machine and a processor queue for a processor;

storing in the processor queue data to be processed for the virtual machine being

30   executed;

creating a copy in the respective virtual machine queue of the data in the processor queue when the respective virtual machine is executing; and

wherein when one of the virtual machines resumes executing after another of the virtual machines was executing, copying the data from the respective virtual machine queue to the processor queue.

14.   The method of claim 10, wherein the wireless network applications are selected from the group consisting of:

a wireless network access point;

a wireless network client;

a wireless network point-to-point bridge;

a wireless network multi-point bridge; and

a wireless network repeater.

15.   The method of claim 10, further comprising:

executing selected ones of the virtual machines in accordance with an input.

16.   The method of claim 10, further comprising:

executing a plurality of the virtual machines concurrently.

17.   A wireless network device for communicating with a network comprising:

a memory to store an image comprising a plurality of virtual machines and only one

5   multi-tasking operating system, wherein each of the virtual machines comprises a wireless

network application to execute on the multi-tasking operating system;

a processor to execute the virtual machines; and

a bus to communicate with the processor and the network.

10   18.   A wireless network device according to claim 17 which is compliant with a

standard selected from the group consisting of IEEE standards 802.11, 802.11a, 802.11b,

802.11g and 802.11n.

19.   The wireless network device of claim 17, wherein the memory comprises a

15   non-volatile memory, further comprising:

a volatile memory; and

a memory controller to create a copy of the image from the non-volatile memory to

the volatile memory;

wherein the processor executes the virtual machines from the volatile memory.

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20.   The wireless network device of claim 17:

wherein the memory comprises a virtual machine queue for each virtual machine and

a processor queue for the processor;

wherein the processor stores data to be processed for the virtual machine being

25   executed by the processor in the processor queue;

wherein each virtual machine creates a copy in the respective virtual machine queue

of the data in the processor queue when the processor is executing the respective virtual

machine; and

wherein when the processor resumes executing one of the virtual machines after

30   executing another of the virtual machines, the one of the virtual machines copies the data

from the respective virtual machine queue to the processor queue.

21.   The wireless network device of claim 17, wherein the image further comprises:

a plurality of virtual machine device drivers to communicate with the virtual machines; and

a bus interface driver to communicate with the virtual machine device drivers and the bus.

22.   The wireless network device of claim 17, further comprising:

a physical-layer device to communicate with the network; and

a media access controller to communicate with the physical-layer device and the bus.

23.   The wireless network device of claim 22, wherein the image further comprises:

a plurality of virtual machine device drivers to communicate with the virtual machines;

a first bus interface driver to communicate with the virtual machine device drivers and the bus;

a second bus interface driver to communicate with the bus; and

a media access controller device driver to communicate with the second bus interface driver and the media access controller.

24.   The wireless network device of claim 17, wherein the wireless network applications are selected from the group consisting of:

a wireless network access point;

a wireless network client;

a wireless network point-to-point bridge;

a wireless network multi-point bridge; and

a wireless network repeater.

25.   The wireless network device of claim 17, further comprising:

an input device to select one or more of the virtual machines;

wherein the processor executes the virtual machines selected by the input device.

26.   The wireless network device of claim 17, wherein the processor executes a
plurality of the virtual machines concurrently.

27.   The wireless network device of claim 17:

wherein the virtual machines comprise a wireless network access point virtual
machine and a wireless network client virtual machine;

wherein the processor executes the wireless network access point virtual machine and
the wireless network client virtual machine concurrently;

wherein the wireless network client virtual machine comprises

a first virtual wireless port to communicate with the port, and

a first virtual bridge to communicate with the first virtual wireless port; and

wherein the wireless network access point virtual machine comprises

a second virtual wireless port to communicate with the port,

a virtual distribution service port to communicate with the first virtual bridge,
and

a second virtual bridge to communicate with the second virtual wireless port and the
virtual distribution service port.